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DIRECTORATE OF INTELLIGENCE

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China's Telecommunications Industry

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Modernization of telecommunications has become a major priority within China's overall development scheme, with the Chinese stressing the upgrading of indigenous R&D and manufacturing programs. China has expressed strong interest in importing Western technology to support these efforts. Bureaucratic rivalries and the lack of a well-coordinated strategy for modernizing existing capabilities, however, will seriously slow any major improvements in existing systems.

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The telecommunications industry in China is undergoing a transition from mechanical and semiautomatic systems to fully automatic electronic systems. Although substantial progress has been made over the past several years, China's industrial and S&T establishments lack the technical capabilities to design and manufacture most of the equipment needed to modernize the country's facilities. Quality control problems, along with funding limitations impose a critical ceiling on current development programs.

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Prior to 1980, telecommunications had been a relatively neglected sector within the Chinese economy, receiving only modest funding from central authorities. Technical personnel who have surveyed Chinese equipment have remarked about the generally backward state of Chinese equipment,

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In 1981, Beijing announced a ten-year plan for development of the country's telecommunications sector that called for improvements in five areas:

Improvement of the capacity of the system as a whole by phasing out obsolete equipment and promoting technical renovation.

Improvement of long-distance capacity between provinces through the repair of existing lines and introduction of new links, including the addition of ancillary facilities and coaxial cables between Beijing, Shanghai and Hangzhou and expansion of its Beijing-based microwave trunk lines.

Expansion of intraprovincial networks through an increase in the number of circuits and the use of semi-automatic/automatic switching devices.

Alleviation of the shortage of telephones in key cities, including the establishment of a telephone system where the major costs are borne by the subscribers.

Establishment of a telecommunications and broadcasting satellite system.

The Chinese also are interested in the development and use of fiber optics for wideband transmission. Possession of such capabilities could lead to major improvements in the operation and reliability of the Chinese internal communications system.

Organization of the Telecommunications Industry

Responsibility for operation and modernization of China's telecommunications system rests with the Ministry of Posts and Telecommunications (MPT). The problems of managing the telecommunications network in China are compounded, however, by the fact that several other ministries operate their own distinct communications networks, including the Ministry of National Defense and the Ministry of Electric Power. Other special purpose systems serve weather and shipping needs. Several other organizations, such as the Ministry of Petroleum Industry seek their own systems, thus further complicating a situation that is already characterized by intense bureaucratic rivalry and competition for resources.

Despite these organizational rivalries, the MPT maintains primary jurisdiction over the country's major communications

links. It possesses its own series of research institutes and over 100 production plants. From a managerial perspective, the MPT organizational structure extends down four levels: national, provincial/municipal, city/county, and local. The Minister of Posts and Telecommunications, Wen Minsheng, has no apparent technical expertise, but has been a government administrator at municipal and provincial levels. [redacted]

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China's Telephone System

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The principal medium for telephone communication is a landline network consisting of open-wire and multiconductor coaxial cable. Coaxial cables link eight Chinese cities through automatic and semiautomatic long-distance dialing. A move is underway to rely on microwave communications as a means to improve links between Eastern and Western China, but application of this technology on a wide-scale basis remains a long-term project. [redacted]

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The MPT is paying particular attention to opening up more circuits and strengthening international communications networks because of China's growing tourist industry and involvement in international economic affairs. Since 1978, the increased foreign presence in China has resulted in a massive demand for more efficient and reliable communication links with the outside world. Heavy investments already have been made in Guangdong province, where more than \$130 million have been allocated to expand the communications links serving Guangzhou and the three special economic zones--Shenzhen, Zhuhai, and Shantou. Plans

include utilization of stored program control (SPC) and digital switching equipment, both of which have had only had limited application in China. In addition, major development efforts are underway in Shanghai to improve telecommunications links in order to facilitate foreign trade and business. In this latter case, however, a strong rivalry between the central MPT authorities in Beijing and the Shanghai MPT bureau has developed over control of these new development efforts.

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Radio and TV Broadcasting

The Chinese TV broadcasting system consists of 38 stations and 246 transmitting/relay stations, which are barely enough to service existing demands. At present, Chinese television is distributed mainly over a 14,500 km microwave mainline network, carrying 960-channels of information. This system utilizes 600 sets of microwave equipment. To reach the wide audience desired by the leadership, however, television reception must be extended beyond the transmitter range of the main provincial station. This has led to the construction of numerous rebroadcasting stations to retransmit signals to outlying areas.

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Satellite Communications

The Chinese have expressed strong interest in establishing a telecommunications and broadcasting satellite system. The impetus for development of such a system dates back at least to 1972 when China first discussed its plans with a visiting delegation from NASA. The Chinese planned to purchase a COMSAT from the United States but these plans were scrapped as part of China's economic readjustment program in 1979. A program is underway to develop a domestically-designed COMSAT, though the launching of this satellite has been delayed for some time. The Chinese have had some success with the use of Intelsat, and in 1982 began using both imported and domestically produced ground stations to conduct TV transmission experiments. China's Ministry of Petroleum Industry is attempting to set up its own internal satellite communications network to improve links for offshore oil development. Although a list of desired equipment has been presented to foreign suppliers, the Chinese have not made any major purchases.

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Fiber Optics Technology

Chinese planners have long expressed a strong interest in fiber optics technology because of security considerations and advantages from a communications standpoint. At the present time, Chinese scientists and technicians have completed some laboratory R&D with fiber optics and set up four experimental links, all of which use semiconductor injection lasers.

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Commercial Opportunities

Over the last several years, China has exhibited an increased interest in acquiring the technology and equipment to strengthen its telecommunications sector from both the West. The Chinese realize that in order to interface with Western communications system they must have compatible technical capabilities. The current drive to modernize rapidly the country's indigenous electronics industry is driven, in large part, by the need for support technologies to upgrade present capabilities. A key element in the agreement, with Belgian ITT for example, is the integrated circuit production technology that will be transferred to China. Although the policy of self-reliance will continue to guide Chinese decisions regarding purchase of equipment from abroad, a decision has been made to secure foreign assistance and state-of-the-art technologies to speed up the pace of present efforts. Programs to send Chinese engineers and technician overseas for advanced training also are well underway and will probably be expanded.

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PRC plans to improve international communications, upgrade cable and microwave connections, expand and improve telephone facilities, and establish a satellite communications system could all benefit from foreign technology and equipment sales. The most important foreign sales areas are likely to be fiber optics, LSI technology, network systems design, computer-aided design, digital switching equipment, and systems design and management technology. China will continue to look to Japan as a primary source of this technology, particularly given the strong links that have developed between the two countries in this area in the past. Sales prospects for US firms will depend on the degree to which present export controls limit the transfer of telecommunications technology. Joint ventures, assembly, and coproduction agreements are particularly attractive to the Chinese.

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